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Effect of transcatheter aortic valve implantation on health-related quality of life in older adults with multimorbidity

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ABSTRACT

Purpose: The purpose of this study was to determine the effect of transcatheter aortic valve implantation on health-related quality of life in older adults with multimorbidity and to evaluate the predictive factors for postoperative quality of life impairment in such patients.

Material and method: This study included 141 older adults with severe aortic stenosis scheduled for elective transcatheter aortic valve implantation. Quality of life was examined in all patients using the Short-Form 36 Health Survey Questionnaire, before and 2 years after surgery. Comorbidity was assessed using the Charlson Comorbidity Index.

Results: In older adult patients with aortic stenosis and multimorbidity, transcatheter aortic valve implantation significantly improved both physical and mental components of quality of life 2 years after surgery. A Charlson Comorbidity Index ≥5 points was independently associated with the absence of positive dynamics in Physical Health score [odds ratio (OR) 0.38 (0.20–0.75), p = 0.007]. Charlson Comorbidity Index ≥5 points [OR 0.31 (0.19–0.58), p = 0.026] and new-onset arrhythmia [OR 0.54 (0.38–0.78), p = 0.017] were independent predictors of the absence of positive dynamics in Mental Health score after transcatheter aortic valve implantation.

Conclusions: High-level comorbidity (Charlson Comorbidity Index ≥5 points) predicts both Physical and Mental Health scores for quality of life impairment following transcatheter aortic valve implantation in older adults, and new-onset arrhythmia predicts the Mental Health score for quality of life impairment following transcatheter aortic valve implantation in these patients.

1. Introduction

Aortic stenosis (AS) is the most common valvular disease that requires surgery or catheter intervention, with a growing prevalence among older adults (Díez-Villanueva, Salamanca, Rojas, & Alfonso, 2017; Falk et al., 2017). Presently, guidelines for treatment of valvular heart disease in older adults recommend transcatheter aortic valve implantation (TAVI) (Falk et al., 2017; Nishimura et al., 2017). These recommendations are the result of several randomized controlled trials demonstrating that in patients with high surgical risk, the less invasive TAVI procedure reduces mortality and improves quality of life (QoL) compared with standard therapy in patients who were deemed inoperable (Arnold et al., 2014; Leon et al., 2016; Reynolds et al., 2012; Thourani et al., 2016). The PARTNER (Placement of AoRTic TraNscathetER Valve) trial, which enrolled symptomatic patients with severe AS, reported no difference between TAVI and surgical aortic valve replacement with respect to all-cause mortality or disabling stroke, after 2 years (Leon et al., 2016). All-cause mortality occurred in 16.7% of the patients treated with TAVI and 18.0% of those treated with surgical aortic valve replacement. Disabling stroke occurred in 6.2% of the patients treated with TAVI and 6.3% of those treated with surgical aortic valve replacement (Leon et al., 2016).

Nevertheless, any cardiosurgical treatment in elderly patients is associated with a high risk, which in most cases is due to multimorbidity and high mortality. Adverse prognostic effects of chronic lung disease, atrial fibrillation, chronic kidney disease, and critical

Abbreviations: Age-CCI, age corrected Charlson Comorbidity Index; AS, aortic stenosis; BP, bodily pain; CCI, Charlson Comorbidity Index; CI, confidence intervals; GH, general health; HR, hazard ratio; MH, mental health; MH sum, mental health summary; NYHA, New York Heart Association; OR, odds ratios; PF, physical functioning; PH sum, physical health summary; QoL, quality of life; RE, role functioning emotional; RP, role functioning physical; SF, social functioning; SF-36, short-form 36 questionnaire; TAVI, transcatheter aortic valve implantation; TIA, transient ischemic attack; VT, vitality

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hemodynamic state on the clinical outcomes of TAVI have been reported (Allende et al., 2014; Chopard et al., 2015; Gunter et al., 2013; Thirumala et al., 2017). As a result, improvement in the functional status after surgical treatment of one pathology may not significantly improve the QoL when multimorbidity is present.

In light of the above, a more complete understanding of the impact of multimorbidity on the QoL dynamic of elderly patients undergoing TAVI is necessary. The aim of this study was to determine the effect of transcatheter aortic valve implantation on health-related quality of life in older adults with multimorbidity and to evaluate the predictive factors for postoperative quality of life impairment in such patients.

2. Material and methods

2.1. Study design

We recruited 141 consecutive older adults with severe AS scheduled for elective TAVI between 2015 and January 2016. The study was based on prospectively collected data and conducted in compliance with the principles of the Declaration of Helsinki. All participant provided written informed consent. The observation period extended from the time of study inclusion until death or up to 2 years after TAVI.

Severe AS was defined as an aortic valve area < 0.8 cm^2 and/or mean aortic valve gradient of ≥ 40 mmHg. All patients were referred to a high surgical risk of perioperative mortality, based on a European System for Cardiac Operative Risk Evaluation (EuroSCORE) $\geq 20\%$. Exclusion criteria were mitral regurgitation ≥ 4, emergency surgery, recent or ongoing myocardial infarction, and stroke.

2.2. Operative technique

The Medtronic CoreValve (Medtronic, Inc., Minneapolis, MN) system with porcine leaflets on a self-expanding Nitinol (nickel-titanium) frame was used in all patients. The TAVI procedure was performed via transfemoral or transsubclavian approach, using 3 valve sizes (26, 29, and 31 mm). Local anesthesia was used for all patients.

First, through the left femoral artery an angiographic Pigtail catheter was inserted at the aortic valve level. X-ray contrast was introduced through the catheter, allowing the aortic valve to be visualized. After puncture of the right femoral artery under X-ray contrast, a conductor was inserted into the left ventricle through the narrowed aortic valve. Then, the delivery system was inserted into the aortic valve position and the prosthesis was positioned in the valve. At the same time under angiography control, the entire device was opened. After correct positioning of the device and good fixation at the fibrous ring was confirmed, the delivery system was removed.

2.3. Quality of life assessment

QoL was assessed by administering the Short-Form 36 Health Survey Questionnaire (SF-36) the day before TAVI and for the long-term follow-up (2 years after TAVI procedure) via a telephone call to the patient, as indicated in the informed consent form.

The SF-36 consists of 36 short questions which are divided into 8 subscales:

1 Physical Functioning (PF) – the extent to which health limits physical activities such as self-care, walking, climbing stairs, bending, lifting or carrying weights, and moderate or intense effort.
2 Role functioning physical (RP) – the extent to which physical health interferes with work and other daily activities, such as lower than desired productivity, limitation of the type of activities performed, or difficulty in performing activities.
3 Bodily Pain (BP) – the intensity of pain and the effect of pain on normal work, both inside and outside the home.
4 General health perceptions (GH) – personal evaluations of current health, health outlook, and resistance to illness.
5 Vitality (VT) – feeling of energy and vitality versus feeling of tiredness and exhaustion.
6 Social Functioning (SF) – the extent to which physical health or emotional problems interfere with normal social activities.
7 Role functioning emotional (RE) – degree to which emotional problems interfere with work or other daily activities, such as a reduction in the time dedicated to those activities, lower than desired productivity, and reduced care and attention to work.
8 Mental Health (MH) - general mental health including depression, anxiety, behavioral-emotional control, and general positive affect.

These 8 subscales are summarized in 2 characteristics: the Physical Health summary (PH sum) and Mental Health summary (MH sum) scores. SF-36 scores are expressed on a scale that runs from 0 to 100, with a higher score indicating a better QoL (Ware, 2000).

The dynamic of QoL was assessed as a percentage of the values on the questionnaire scales in the long-term follow-up relative to the baseline values. Positive dynamic was considered at a value of 5% or more.

2.4. Clinical variables

The following data were collected: age, gender, body mass index, documented New York Heart Association (NYHA) functional class, previous cardiac interventions, Charlson Comorbidity Index (CCI) (Degroot, Beckerman, Lankhorst, & Bouter, 2003) and age-corrected Charlson Comorbidity Index (Age-CCI). Among the comorbidities, all diseases included in the CCI were analyzed. Only the diseases present in this group of patients are described in the baseline characteristics: coronary artery disease, previous arrhythmia, myocardial infarction, stroke or transient ischemic attack, chronic kidney disease, chronic liver disease, chronic lung disease, diabetes mellitus, peripheral vascular disease, previous solid tumor, and hypertension.

All patients underwent transthoracic echocardiography to assess left ventricular ejection fraction, aortic mean gradient, aortic peak gradient, valve area, aortic and mitral regurgitation, before TAVI and before discharge for assessment of transcatheter heart valve function. Pre- and post-TAVI contrast-enhanced multislice computed tomography examinations were performed for assessment of transcatheter heart valve function.

Postoperative data include length of in-hospital stay and the following definitions of adverse postoperative events: prosthetic dysfunction or dislocation, hear failure, stroke, new-onset atrial fibrillation or supraventricular tachycardia, ventricular arrhythmias, high-degree AV block, in-hospital mortality, and all other complications. In-hospital mortality was defined as death after TAVI from any cause in the hospital. In the long-term follow-up (2 years after TAVI), all the above postoperative events and long-term all-cause mortality were assessed, with a separate estimate of the cardiovascular mortality. Long-term mortality was confirmed via a telephone call to the patient or the patient's next of kin.

2.5. Statistical analysis

Continuous variables are presented as median and interquartile range. Categorical variables are presented as frequencies (percentage). The Wilcoxon two-sample test was used to compare hemodynamic data and QoL results before and after TAVI. Univariable and forward stepwise multivariable logistic regression analyses or a Cox regression model was used to identify risk factors associated with adverse TAVI outcomes. Covariates were entered into the stepwise selection of the multivariable regression analysis as they fulfilled the inclusion criterion of a percentage of non-missing values $\geq 90\%$ and a univariable $p \leq 0.10$. Results are presented as odds ratio (OR) or hazard ratio (HR) with corresponding 95% confidence interval (CI). Survival curves were

Table 1
Baseline characteristics of enrolled patients. Continuous variables are median (interquartile range), categorical variables are frequencies (percentage).

Parameters			Value for study group (n = 141)
Age, years			76 (70–79)
Male, n (%)			51 (36)
Body mass index, kg/m^2			27 (22–31)
NYHA class, n (%)	II		14 (10)
	III		125 (89)
	IV		2 (1)
Peak aortic gradient, mmHg			94 (75–114)
Mean aortic gradient, mmHg			53 (44–68)
Left ventricular ejection fraction, %			60 (50–68)
Aortic regurgitation, n (%)	0		0 (0)
	1		105 (74)
	2		36 (26)
Mitral regurgitation, n (%)	0		0 (0)
	1		75 (53)
	2		66 (47)
Aortic valve area, cm^2			0.8 (0.7–1.0)
Coronary artery disease, n (%)			87 (62)
Hypertension, n (%)			129 (91)
Arrhythmia *	All disturbances, n (%)		61 (43)
	Atrial fibrillation, n (%)		45 (32)
	High-degree AV block, n (%)		4 (3)
Previous myocardial infarct, n (%)			62 (44)
Previous stroke or TIA, n (%)			19 (13)
Diabetes mellitus, n (%)			44 (31)
Peripheral vascular disease, n (%)			59 (42)
Chronic lung disease, n (%)			27 (19)
Chronic kidney disease, n (%)			7 (5)
Previous solid tumor, n (%)			5 (3.5)
Chronic liver disease, n (%)			48 (34)
Previous cardiac intervention	Coronary artery bypass graft, n (%)		11 (8)
	Percutaneous coronary intervention, n (%)		51 (36)
	Balloon aortic valvuloplasty, n (%)		8 (6)
CCI, points			4 (3–5)
Age-CCI, points			7 (6–8)

NYHA - New York Heart Association; CCI - Charlson Comorbidity Index; Age – CCI – age corrected Charlson Comorbidity Index; TIA - transient ischemic attack.

* arrhythmia defined as a history of atrial fibrillation, supraventricular tachycardia, ventricular arrhythmias, or high-degree AV block.

constructed by the Kaplan-Meier method and were compared with the log-rank test. For all analyses, a p value < 0.05 was assumed to indicate statistical significance.

All analyses were performed using SPSS (SPSS Inc. Released 2009. PASW Statistics for Windows, Version 18.0. Chicago: SPSS Inc.).

3. Results

None of the 141 enrolled patients were excluded from the study. The baseline clinical and echocardiography characteristics are outlined in Table 1.

The median patient age was 76 years, and 51 (36%) of them were male. Most patients were classified as NYHA functional class III.

The study group was characterized by a high frequency of comorbid pathologies. The most frequently observed were cardiovascular pathologies, diabetes mellitus, and moderate chronic liver disease, whereas lung disease, kidney disease, neurological disorders, and tumors without metastases were less common. All cases of solid tumors were treated at least two years before inclusion in the study. Other disorders, such as AIDS, metastatic tumor, peptic ulcer disease, and connective tissue disease were not observed in the study group. The average CCI was 4 (3–5) points. A CCI of more than 5 points, indicating a high level of comorbidity, was noted in 39 (28%) patients.

Table 2
Procedural characteristics and transcatheter aortic valve implantation postoperative clinical outcomes. Continuous variables are median (interquartile range), categorical variables are frequencies (percentage).

Parameters		Value for study group
Duration of procedure, min		170 (120–194)
Prosthetic valve size		46 (33)
26 mm, n (%)		70 (49)
29 mm, n (%)		25 (18)
31 mm, n (%)		
In-hospital period (n = 141)		
Length of hospital stay, days		8 (7–12)
Prosthetic dysfunction/dislocation, n (%)		3 (2)
Heart failure, n (%)		4 (3)
Stroke, n (%)		5 (4)
New-onset arrhythmia *	All disturbances, n (%)	32 (23)
	Atrial fibrillation, n (%)	4 (3)
	High-degree AV block, n (%)	22 (16)
All other complications, n (%)		20 (14)
In-hospital mortality, n (%)		3 (2)
Long-term follow-up (n = 124)		
Prosthetic dysfunction/dislocation, n (%)		0 (0)
Myocardial infarct, n (%)		6 (5)
Stroke, n (%)		3 (2)
All-cause mortality, n (%)		17 (13)
Cardiovascular mortality, n (%)		12 (9)

* arrhythmia defined as atrial fibrillation, supraventricular tachycardia, ventricular arrhythmias, or high-degree AV block.

Before the TAVI procedure, 8 (6%) patients underwent balloon aortic valvuloplasty as an intermediate stage. Hemodynamic characteristics significantly improved immediately after TAVI. Mean aortic gradient was 7 (5–11) mmHg after TAVI vs. 53 (44–68) mmHg pre-TAVI ($p < 0.001$), and peak aortic gradient was 14 (11–21) mmHg after TAVI vs. 94 (75–114) mmHg pre-TAVI ($p < 0.001$). Moderate aortic regurgitation after TAVI remained in 5 (4%) patients, and moderate mitral regurgitation remained in 12 (9%) patients.

Procedural characteristics and TAVI postoperative clinical outcomes are presented in Table 2.

There were 3 (2%) cases of prosthetic dysfunction/dislocation during in-hospital recovery after TAVI. In one case, subsequent surgical aortic valve replacement with cardiopulmonary bypass was required. In the remaining two cases, re-transcatheter implantation was applied.

Perioperative stroke occurred in 5 patients (4%). New-onset arrhythmia (in most cases, atrial fibrillation) was recorded in 32 cases (23%), and pacemaker implantation was necessary in 14 cases (10%). Among other complications, hemorrhages at the approach site of the transcatheter system were the most common. No reoperation for bleeding or tamponade was required.

The in-hospital mortality rate was 2% (3 cases). The cause of mortality in all the cases was progressive heart failure, in one case where death occurred due to prosthetic dislocation and acute occlusion of the coronary artery.

In the long-term follow-up, 17 patients were excluded from the QoL assessment, as 3 patients died in the hospital and 14 patients could not be reached for follow-up assessment. During the observation period, no patient underwent repeated aortic surgery. Cardiovascular mortality was reported in 12 (9%) cases, including 9 cases of heart failure, 2 cases of acute pulmonary embolism, and one case of stroke. Other causes of death included cancer, ulcer bleeding, and death from unknown reasons.

The baseline QoL in the studied group of older adults was characterized by an extremely low level in the questionnaire summary scores, especially in the PH sum scale (Table 3). All subscales describing the physical health component (PF, RF, BP and GH scales) had baseline values of less than 50 points. A portion of the subscales characterizing the psycho-emotional health component also had values below 50

Table 3
Health-related quality before and after the transcatheter aortic valve implantation. Variables are median (interquartile range).

Parameters	Before TAVI	After TAVI	p-level
PF	45 (25-55)	70 (50-85)	< 0.001
RP	0 (0-50)	75 (0-100)	< 0.001
BP	22 (0-31)	84 (51-100)	< 0.001
GH	30 (20-40)	47 (35-65)	0.023
VT	35 (25-40)	50 (40-60)	0.003
SF	62 (37-87)	100 (75-100)	0.005
RE	67 (0-100)	100 (100-100)	0.001
MH	48 (36-64)	76 (64-88)	0.003
PH sum	26 (23-33)	42 (31-50)	0.017
MH sum	43 (34-50)	55 (49-58)	0.002

TAVI - transcatheter aortic valve implantation; PF – Physical functioning; RP – Role functioning physical; BP – Bodily pain; GH – General health; VT – Vitality; SF – Social functioning; RE – Role functioning emotional; MH – Mental health; PH sum – Physical health summary; MH sum – Mental health summary.

points (VT, MH scales). Only the subscales characterizing social activities (SF) and role functioning associated with the emotional state (RE), indicated average and good QoL.

Follow-up QoL questionnaires were obtained for 124 patients. After TAVI, significant improvements in the QoL in all SF-36 subscales were observed. However, the value of QoL in the PH sum and MH sum scales after TAVI remained reduced in comparison with the normal level.

Absence of positive QoL dynamics for Physical Health score was recorded in 14% of the cases and for Mental Health score was recorded in 20% of the cases. Factors affecting the dynamics of health-related QoL after TAVI are presented in Table 4.

Based on the results of multivariable analysis, a CCI ≥ 5 had a significant negative effect on the QoL dynamics in the physical and mental health components. In addition, new-onset arrhythmia had an adverse effect on the mental health component of the QoL.

In addition to the impact on health-related QoL, a CCI ≥ 5 had a significant effect on the long-term mortality after TAVI [HR 2.92 (1.07–8.15), p = 0.036] (Fig. 1).

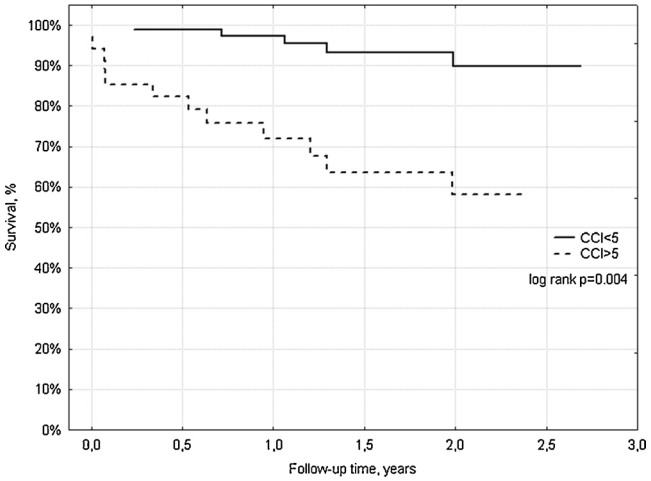

Fig. 1. Cox survival curves for older adults after transcatheter aortic valve implantation, according to Charlson Comorbidity Index.
CCI - Charlson Comorbidity Index.

4. Discussion

The choice of TAVI procedure for elderly patients is currently justified because of its high efficiency and good clinical outcomes. In this study, we demonstrated that TAVI improves hemodynamic characteristics. Moreover, both physical and mental components of QoL showed marked improvement after intervention. The in-hospital cardiovascular mortality was 2%, and the mortality 2 years after TAVI was 9%. These findings are similar to the previously reported results (Holzhey et al., 2012; Reynolds et al., 2012). It has been reported that the annual mortality after TAVI in patients with high surgical risk was 10% (Holzhey et al., 2012). According to other data, a similar category of patients was characterized by a long-term mortality rate of 7–9% (Funkat et al., 2013; Walther et al., 2013). In previous studies, the authors demonstrated an improvement in QoL after TAVI, determined using both specific and general questionnaires (Olszewska et al., 2017; Tokarek et al., 2016). In addition, Olszewska et al. (2017) in their study showed the high importance of assessing cognitive function in patients scheduled for TAVI (Olszewska et al., 2017).

Meanwhile, high level of comorbidity (CCI ≥ 5) during the natural development of pathological processes is characterized by a low survival rate (≤70%) (D'Hoore, Sicotte, & Tilquin, 1993; Degroot et al., 2003). CCI ≥ 5 significantly increased the risk of mortality in long-term follow-up in our study, but the survival rate remains significantly higher than that reported for patients without surgical treatment (Degroot et al., 2003; D'Hoore et al., 1993).

The clinical outcome of TAVI is adversely affected by a number of factors (Arnold et al., 2014). Chronic lung disease, chronic kidney disease, atrial fibrillation, and a subjective assessment of frailty have shown association with long-term mortality after TAVI (Rodés-Cabau

Table 4
Univariable and multivariable regression analysis to assess the impact of factors on the dynamic of health-related quality of life after transcatheter aortic valve implantation (OR (95% CI), p level).

Parameters	Positive dynamic of Physical Health		Positive dynamic of Mental Health	
	Univariable model	Multivariable model	Univariable model	Multivariable model
Age	0.95 (0.88–1.03), 0.254	–	0.96 (0.90–1.02), 0.163	–
Sex	1.25 (0.97–2.04), 0.075	–	0.54 (0.19–1.54), 0.234	–
Body mass index	1.02 (0.97–1.04), 0.882	–	1.01 (0.98–1.04), 0.419	–
III-IV NYHA class	0.91 (0.74–0.98), 0.033	–	0.87 (0.25–3.13), 0.832	–
Peak aortic gradient	0.99 (0.97–1.01), 0.240	–	0.89 (0.73–0.98), 0.029	–
Mean aortic gradient	0.96 (0.88–0.99), 0.036	–	0.97 (0.91–1.03), 0.442	–
Left ventricular ejection fraction	1.01 (0.97-1.04), 0.591	–	0.98 (0.96–1.01), 0.548	–
New-onset arrhythmia (All disturbances)	0.71 (0.29–1.07), 0.071	–	0.47 (0.29–0.78), 0.002	0.54 (0.38–0.78), 0.017
New-onset arrhythmia (High-degree AV block)	0.72 (0.32–1.16), 0.148	–	0.52 (0.16–0.94), 0.021	–
Previous chronic lung disease	0.93 (0.33–0.98), 0.039	–	1.09 (0.67–4.24), 0.259	–
Length of hospital stay	0.95 (0.89–0.99), 0.058	–	1.02 (0.97–1.06), 0.391	–
CCI	0.59 (0.40-0.88), 0.008	–	0.55 (0.37–0.80), 0.002	–
CCI ≥ 5	0.33 (0.14–0.79), < 0.001	0.38 (0.20–0.75), 0.007	0.25 (0.11–0.59), < 0.001	0.31 (0.19–0.58), 0.026
Age-CCI	0.72 (0.51–0.99), 0.046	–	0.71 (0.52–0.98), 0.034	–

NYHA - New York Heart Association; CCI - Charlson Comorbidity Index; Age-CCI - age corrected Charlson Comorbidity Index.

et al., 2012). The severity of hemodynamic disorders and surgical details of the intervention also significantly affect the risk of complications (Gilard et al., 2012). It has been demonstrated that in elderly patients with multimorbidity, inclusion of QoL as a factor for the determination of treatment outcomes is critical, as improved QoL can be the primary treatment goal of many patients considering TAVI (Arnold et al., 2014). Despite this treatment goal, there remain some patients who do not achieve the desired improvement in QoL following the intervention. The main goal of this study was to identify factors that prevent the improvement of QoL after TAVI.

According to our results, high level of comorbidity (CCI ≥ 5) has a significant negative impact on the QoL dynamics. CCI is the most widely used comorbidity index and patients with CCI > 5 points are considered to have severe comorbidity (Degroot et al., 2003). By using CCI to predict outcomes, we demonstrate that the CCI ≥ 5 not only significantly increases the risk of mortality in long-term follow-up, but it is also responsible for the absence of improvement in the physical and mental components of QoL.

The conductive heart system is located in the immediate vicinity of the aortic valve ring, so when implanted, it falls under that part of the prosthesis, where the radial force is maximum, which increases the risk of arrhythmia after TAVI. In the present study, a relationship between arrhythmia and the mental health component of QoL was observed. It is known that arrhythmia, such as atrial fibrillation, has a significant negative impact on patients' clinical outcomes and self-reported QoL (Freeman et al., 2015; Lakshminarayan, Solid, Collins, Anderson, & Herzog, 2006; Marrouche et al., 2018). Studies have shown a significant relationship between QoL and arrhythmia symptoms that relate to the physical health, such as, dyspnea at rest, exercise intolerance, and chest discomfort (Freeman et al., 2015; Lakshminarayan et al., 2006). The data presented herein suggest that new-onset arrhythmia has a significant negative impact on the dynamics of the psychological component of QoL (dynamic of the mental health summary score) in older adults after TAVI. At the same time, the previous long-term arrhythmia in patients with AS in a multifactorial model did not show a significant effect on the QoL.

Several other factors in the present multivariable model have lost their significance. Thus, chronic pulmonary diseases, despite their pronounced effect on clinical outcomes reported previously (Gunter et al., 2013) and significant impact in the univariable model, were not associated with the changes in QoL. The same was true for baseline hemodynamic characteristics.

Limitations of this study include a relatively small number of patients and an absence of mild-term QoL assessment after TAVI procedure. A 6-month and/or 1-year follow-up may be important for evaluating the efficiency of less invasive surgical interventions.

5. Conclusions

The TAVI procedure in older adults with severe AS significantly improves the health-related QoL with respect to all components of the SF-36 questionnaire. Nevertheless, an absence of positive QoL dynamics in Physical Health score was recorded in 14% of the patients, and for Mental Health score in 20%.

These findings indicate that a high-level comorbidity (CCI ≥ 5) significantly reduces the possibility of improvement in the Physical Health and Mental Health scores for QoL after TAVI procedure. New-onset arrhythmia after TAVI also has an independent adverse effect on the QoL dynamics in Mental Health score.

Conflict of interest statement

This work was supported by a Russian Science Foundation grant (№ 17-75-30009). The funding source had no involvement in the development of the research project, in the collection, analysis and interpretation of data, and in the decision to submit an article for publication.

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